

Application No. 10/615,811

Docket No. 4535A

IN THE CLAIMS:Listing of Claims:

1)- 42) (canceled)

43) (currently amended) A method for cleansing the atmosphere by a vehicle powered by an internal combustion engine comprising the steps of:

- a) drawing a first stream of atmosphere into the engine compartment of a vehicle by means of a fan and/or the motion of the vehicle, said first atmosphere ~~steam~~ stream being at ambient engine cabin temperature;
- b) drawing a second stream of atmosphere either separately from said first stream or split from said first stream into said second stream by means of a fan and/or the motion of the vehicle;
- c) heating said second atmosphere stream by sensible heat from exhaust gases produced by said engine to temperatures in the range of approximately 150° to 300°C;
- d) providing a heat wheel having channels extending therethrough from one side of said heat wheel to the opposite side of said heat wheel; said channels having as a coating thereon activated carbon of a micropore porosity, said carbon having a density of at least 0.5 g/in<sup>3</sup> and a mean particle size not greater than 25 microns;
- e) passing said first stream of atmosphere through channels occupying, at any given time, a first position dependent portion of said heat wheel to adsorb volatile organic compounds contained in said atmosphere;
- f) passing said second stream of heated atmosphere through channels occupying, at any given time, a second position dependent portion of said heat wheel to desorb volatile organic compounds contained in said channels;
- g) directing said second stream of heated atmosphere with volatile organic compounds desorbed from said wheel to the gaseous emission treating system of said vehicle; and,
- h) rotating said wheel so that before the channels in said first position dependent portion of said heat wheel become saturated with volatile organic compounds they are

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rotated into a position whereat the channels become channels forming the second position dependent portion of said heat wheel while the desorbed channels formerly forming the second position dependent portion of said heat wheel are rotated into a position whereat the channels become part of the channels forming said first position dependent portion of said heat wheel.

44) (original) The method of claim 43 wherein said heat wheel is rotated as a function of the time it takes to desorb the volatile organic compounds in said second position dependent portion of said heat wheel.

45) (original) The method of claim 44 wherein said heating of said second atmosphere stream occurs by passing said second stream over an exhaust manifold of said engine.

46) (original) The method of claim 45 further including the step of sensing the hydrocarbons in said second atmosphere stream after said second atmosphere stream has passed through said second position dependent portion of said heat wheel and rotating said heat wheel through a set, included angle when hydrocarbons are no longer sensed as being present for a set time period.

47) (original) The method of claim 46 further including the step of providing an alarm in an operator cabin of said vehicle and actuating said alarm if hydrocarbons are not initially sensed upon rotation of said heat wheel.

48) (original) The method of claim 47 wherein said sensing step is accomplished by a calorimetric sensor having a heated catalyzed surface and a heated non-catalyzed surface over which a slip stream of said second atmosphere stream is passed after leaving said heat wheel.

49) (original) The method of claim 48 wherein the mean activated carbon particle size is less than 25 microns and said activated carbon including the step of reducing ozone in addition to adsorbing said volatile organic compounds so that the step of regenerating said activated carbon upon heating not only regenerating the ability of said activated carbon to adsorb volatile organic compounds but also regenerating the ability of said activated carbon to catalyze ozone reducing reactions to O<sup>2</sup>.

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50) (original) The method of claim 49 wherein the step of directing said second atmosphere stream to said vehicle's emission system after passing through said heat wheel occurs by initially directing said second atmosphere stream to an intake manifold of said engine.

51) (original) The method of claim 50 wherein said wheel is divided into a plurality of arcuate segments of an included angle extending between radial lines defining the edge of each segment, said wheel having a radial space between radial edge lines of each segment so that as each segment is rotated into said second position dependent portion, the heat from the segment in said second position dependent portion tending to be isolated from the segments in said first position dependent portion.

52) (original) The method of claim 51 wherein said rotation occurs by sensing the temperature of said exhaust gases and indexing said wheel before heat from said second position dependent portion of said wheel materially affects the temperature of said segments in said first dependent portion of said heat wheel provided that said hydrocarbons sensed in said heat outlet duct have dropped below a set value.

53) (original) The method of claim 43 further including the step of adhering said activated carbon as a coating on said channels by providing a slurry of said activated carbon to which is added a silicone binder in any form and heating said slurry applied to said channels at elevated temperatures in the presence of air to stabilize said coating at temperatures at least up to 300°C.

54) (original) The method of claim 53 wherein said silicone binder is a silicone latex binder and said slurry is initially heated in only the presence of an inert gas at an initial temperature.

55) (original) The method of claim 54 wherein said inert gas is nitrogen and said slurry is initially heated to temperatures less than said elevated temperature and said elevated temperature is approximately 300°C.

56) – 59) (canceled)